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ABSTRACT

Students' attitudes and preparation practices regarding standardized tests were studied with students from one elementary school and two middle schools in Atlanta (Georgia). There were 111 fifth graders (35 African American and 76 European American) and 274 eighth graders (204 African American and 70 European American). Students completed a survey about motivational factors and test preparation the week before taking the Iowa Tests of Basic Skills (ITBS). Eighth graders perceived the tests as less valid, and they prepared less for the tests and expected to do less well than did the fifth graders. Fifth graders were more anxious, but racial differences were not found for anxiety. There was a negative relationship for African American students between performance on the ITBS and believing that test scores reflected intelligence, but no such relationship was found for European American students. In addition, there was no relationship between thinking the test was important and test scores among African American students, but this relationship was positive for European American students. Differences by race and grade level suggest that there may be more to how students do on the tests than what they learn in school. (Contains 1 table, 3 figures, and 28 references.) (SLD)

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ED 424 279

Differences by Race and Grade Level in Motivation for Taking Standardized Achievement Tests

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"If you're not keeping score, you're just practicing."

Vince Lombardi, as cited in
the 1994 Goals 2000 report

Standardized testing is an expensive practice. Revenues from the sales of commercially published standardized tests designed for use in K-12 settings exceeded $100 million in 1989 (Morison, 1992). Adjusted for inflation, this figure represents a more than two-fold increase in spending on standardized tests since 1960 despite a mere 15% increase in student enrollment over the same period. President Clinton's call for nationwide testing of all students in grades 4 and 8, along with Governor Wilson's plan to test all of California's 2nd through 11th graders, indicates that the frequency of testing will continue to grow.

The increasing emphasis on testing is a product of the increasing focus on "accountability" for our schools. As the Vince Lombardi quote cited above suggests, there is a growing perception that without quantifiable measures of educational outcomes, students' experiences in school are meaningless. There are a number of potential explanations for the increasing emphasis on quantifiable outcomes. For example, there is the perception that our nation's schools are failing to adequately educate students, a perceptions fueled by recent cross-national comparisons of student achievement (Berliner & Biddle, 1995; Bracey, 1994). On the more cynical side, some have suggested that the call for accountability reflects an organized attempt to direct public tax dollars toward private schools (Berliner & Biddle, 1995).

Whatever the cause of the increased use of and emphasis on standardized tests, the effect is that the tests are being used as the primary, and in many cases the only, means of assessing the effectiveness of schools and programs. Increasingly, standardized test scores are being used to make decisions about which programs and schools should receive funding, which teachers should receive merit pay, and even how much homes in certain school districts should cost. With all of these decisions riding on the results of standardized testing, one might think that the validity of these test results has been determined and secured. One might be wrong.

Questions about the validity of standardized tests

A number of researchers have found that teachers and students have feelings and beliefs about standardized tests that may cause them to engage in practices that undermine the validity of the tests. For the tests to be valid, a number of conditions must be met. For example, the tests must actually measure what they are purported to measure. The creators of commercial tests often spend a great deal of time and money to ensure the face validity of test items. For the most part, researchers who question the validity of standardized tests have not specifically addressed whether the items on the test measure knowledge of math or verbal skills. Rather, these researchers tend to focus on practices that undermine the common use of test scores to make comparisons between students, teachers, programs, schools, and nations.

If all students are not prepared to take the tests in the same manner, or if the tests are administered to different students under different conditions, then comparisons between students may not be valid. A number of studies have found that teachers have generally unfavorable perceptions of standardized tests (Green & Stager, 1986; Haladyna, Nolen, & Haas, 1991; Smith, 1991a, b; Urdan & Paris, 1994). Some of this research has documented that teachers sometimes engage in practices that undermine the validity of the tests. Some questionable practices include gearing their curriculum around test topics, teaching items that were covered on previous years' tests, and teaching items to be included on the present test (Nolen, Haladyna, & Haas, 1992; Smith, 1991a). Additional research has found that teachers of European American students spent less time preparing their students to take the tests, taught to the test less, and used questionable preparation practices (such as using test items from previous years' tests) than did teachers of minority students.

In addition to the research on teachers' attitudes and practices, there has been a limited amount of research on students' attitudes and approaches to taking standardized tests. Bracey (1991) reports anecdotal evidence that students in other countries view performance on the tests used for cross-national comparisons as a potential source of national pride whereas American students view the tests as trivial. Paris and his colleagues (Paris, Lawton, Turner, & Roth, 1991) found that as students get older, they tend to view standardized achievement tests with increasing pessimism and as more anxiety provoking, less important, and less likely to demonstrate what they know compared to classroom measures of achievement. Some students, particularly lower achievers, reported deliberately undermining their own performance on the test.

Differences in standardized testing by race

Due to the increasing use of standardized tests in guiding educational curriculums, funding, and the placement of students in specialized programs, there is a growing need to understand the gap in achievement scores existing between African American and European American students (Alexander & Entwistle, 1988; Burton & Jones, 1982). Green and Griffore (1977) maintain that while there are many advantages gained by the standardized testing of students, minority students are particularly vulnerable to the negative impact of standardized testing. Specifically, students from minority ethnic or racial groups are susceptible to inappropriate inferences made about their test scores. Traditionally, the lower performance of African American students has been attributed to a lower need for achievement, lower self-esteem, cognitive or linguistic deficits, economic disadvantage, or a lack of self direction (Stevenson, Chen & Uttal, 1990). Cultural biases in test content, norming and testing situations have also been examined (Green & Griffore, 1980; Williams & Mitchell (1977). Yet differences between African American and European American students' scores still exist even in tests that claim to be "culture free".

Racial biases in standardized achievement tests favoring European American students have been attributed to numerous sources beyond the content bias of the tests and disadvantaged economic status of African Americans. Clawson, Firment and Trower (1981) found that African American students report significantly more test anxiety compared to European American students. Furthermore, a disproportionate number of African American students reported themselves as having high trait and state anxiety. Test anxious students respond with excessive nervousness, including negative, self-centered thoughts and increased emotionality, to testing situations. Test anxiety is negatively related to test performance and is believed to occur when the testing situation is perceived to pose a threat to self-esteem. Payne (1984) also found higher levels of test anxiety in African American students. Her research suggests that test anxiety may operate differentially. The expected relationship of test anxiety to answer changing behavior was only found in European American male students. For these students, increased test anxiety was related to increases in answer changing behavior and subsequent increases in performance. African American students, however, while significantly more likely to change their answers during a test, were more likely to make wrong/wrong or right/wrong answer changes. Furthermore, their answer changing behavior was unrelated to their reported levels of test anxiety. Payne (1984) suggests the pattern of answer changing in African American students reflects a lack of confidence in their own judgment.

In her review of the literature of the achievement motivation of African American students, Graham (1994) found evidence of differences between the expectancy beliefs and self-concept beliefs of African American and European American students (see also Stevenson, Chen & Uttal, 1990). When asked to predict how well they will do on a task, African American students are more likely to overestimate their performance. Furthermore, they are more likely to report high future expectancies following failure situations. These data suggest that African American students remain optimistic about their future performance even after experiencing failure on a task. This optimism about future performance is coupled with a positive perception of personal and academic competence that is equal to or greater than European American students.

Steele (1992; 1997; Steele & Aronson, 1995) theorized that the performance differences of African American students on tests of their intellect are the result of a stereotype threat. He argued that minorities face the threat of confirming a societal stereotype about their groups' intellectual ability. The threat interferes with the intellectual functioning of African American students, causing them to process

information ineffectively during test taking situations. They spend more time working on fewer problems. In order to protect themselves from the threat of confirming the intellectual stereotype, African American students disidentify with academic achievement. In disidentifying, they cease using academic performance as a basis for self-evaluation or personal identity. Steele and Aronson (1995) found that when African American students perceived standardized tests as intellectually diagnostic they are less accurate and complete fewer items. Their perception of a test as intellectually diagnostic results in an increased activation of racial stereotypes, increased reporting of self-handicapping measures, and increased self-doubt. Students were also significantly more likely to dissociate from the racial stereotype, by not reporting their race, when the believed the test to be diagnostic of their intellectual ability. Finally, Steele and Aronson (1995) found that priming subjects to list their racial identity was sufficient to trigger the stereotype threat. African American students in the priming condition performed significantly worse on the standardized test than did African American students in the no-prime condition.

The premise of Steele's theory is that all students initially define themselves and evaluate themselves according to academic achievement. However, with increased awareness of the stereotype threat, African American students, in order to protect their self-esteem, disidentify with academic achievement. This is not to say that they do not value academic achievement, but that they do not define themselves by their academic successes and failures. Steele's theory explains the answer-changing patterns, motivated yet inefficient, and the motivational trends of African American students. Accordingly, it is because the self-evaluation and personal identity of African American students occur independent of academic achievement, that poorer academic achievement can co-occur with high future expectancy and positive self-concept beliefs. Using data from the National Educational Longitudinal Study (NELS), Osborne (1995) found tentative evidence of this trend in 8th and 10th grade students. African American students reported significantly higher global self-esteem than European American students at both 8th grade and 10th grade. However, whereas the correlation between self-esteem and academic achievement decreased for African American students, the correlation between self-esteem and academic achievement remained the same or increased for European American students. Though neither of these changes reached statistical significance, Osborne suggests the lack of statistical significance may be due to the attenuated range of ages examined.

Research questions

The purpose of the present study was to examine students' attitudes and preparation practices regarding standardized tests. The study is primarily a descriptive one. That is, our goal was to get an initial sense of how students may differ in their beliefs about standardized testing and testing practices by the race, grade level, and achievement level of the students involved. Specifically, we wanted to examine these research questions.

1) Do students differ in their motivational orientations, beliefs, and preparation practices regarding standardized tests according to their grade level, achievement level, or their ethnicity?

2) Does the strength of the relationships between predictors (i.e., motivational orientations, beliefs, and preparation practices) and performance on the math portion of the ITBS test differ for African American and European American students?

Method

Participants

Students from one elementary and two middle schools in the metropolitan Atlanta area participated in the study. One hundred eleven fifth grade students (35 African American, 76 European American) from six classrooms participated. The eighth grade sample included 274 students (204 African American, 70 European American). Girls and boys were equally represented in both ethnic groups at both grade levels.

Students received passive permission to participate, and all students that were in selected classes on the days of survey administration were included in the study, except those for whom parental permission was denied (less than 10). At the elementary school level, all fifth grade classrooms were included in the study. At the middle school level, all sections of English classes for five teachers and one section of another teacher were selected according to convenience of scheduling. A preliminary examination of previous year's test scores revealed no differences in the tests scores of students in participating classrooms compared to students in non-participating classrooms.

Measures

Students completed a 78-item survey during the week before taking the ITBS test. The survey included questions about various motivational factors regarding taking the test (e.g., expectancy for success, self-concept as a test-taker, attributions for possible success or failure, anxiety, and valuing). In addition, the survey included questions that tapped into students perceptions regarding the validity of the tests (e.g., "The ITBS test will measure how smart I am"). The survey concluded with questions about how students prepared to take the ITBS test. Students were asked about the amount of time they spent in class using various preparation practices (e.g., "Practicing with ITBS tests from previous years"), their own feelings of preparation (e.g., "I haven't really done anything to prepare for the ITBS test"), and the emphasis that their teachers have placed on doing well on the test (e.g., "My teachers have talked a lot about the ITBS test"). All items were measured using an 8-point scale (1 = 'strongly disagree', 8 = 'strongly agree'). Items were formed into scales on the basis of a priori classification and factor analysis. All scales had acceptable internal consistency (Cronbach's alpha > .60). Items were worded to ask explicitly about the ITBS test (e.g., "I expect to get a high score on the ITBS test").

Procedure

Surveys were administered to students during the week before taking the ITBS test. At the middle school level, students completed surveys during their regularly scheduled English classes. In the elementary school, students completed their surveys in their regular, self-contained classes. All surveys were read to students aloud by trained research assistants while the teacher remained in the classroom. Surveys took approximately 30 minutes to complete.

Results

Student

To answer our first research question regarding whether there were any differences by race or grade level in students' motivational orientations or preparation practices before taking the ITBS test, a series of 2 (race) X 2 (grade level) analyses of covariance (ANCOVA) were conducted. Because there were significant differences by race and grade level on the ITBS test, test scores were used as covariates in all analyses besides those with test scores as the dependent variable. These analyses produced several significant main effects for race and for grade level. Means and a summary of significant ($p < .05$) differences for each dependent variable are presented in Table 1.

The information presented in Table 1 reveal a generally consistent pattern across races. On all of the variables (except math test scores), 5th grade scores were significantly different from 8th grade scores, after controlling for test score differences. For the most part, eighth grade students appear to be less concerned about the ITBS test than fifth grade students in both the African American and European American samples. For example, eighth grade students reported being less anxious about the test, spending less time preparing for the tests, that their teachers engaged in test preparation practices less frequently than did 5th graders. Fifth graders appeared more optimistic about their ability to do well on the test than did 8th graders, as evidenced by higher self-concept and higher expectancy for success. Students also appeared to be growing more test wise as they got older. Eighth graders reported a greater distrust in the validity of the test, particularly for its ability to demonstrate how smart students are, than did 5th graders. Interestingly,

there were grade level differences in the understanding that test scores are used to make comparisons between teachers and schools with 8th graders reporting a stronger belief that this was the case than did 5th graders. An examination of the means that this effect was due primarily to differences among European American students rather than among African American students.

Race differences were obtained for ITBS math scores, self-concept, expectancy for success, and student preparation practices. Despite these performance differences, and when controlling for them, African American students still reported significantly higher expectancies for success and had higher perceptions of themselves as good test takers. African American students also reported doing more to prepare themselves for the test.

To more fully examine ethnic differences, African American and European American students were separated into "high achiever" and "low achiever" groups. To make each of the two high achiever groups statistically equivalent, African American students with percentile scores of 55 or higher were matched with a European American group that scored at the 50th percentile or higher. For the low achiever groups, students with scores below the 50th percentile were included. These high and low achiever groups were created separately for the 5th and 8th grade levels. Results of analyses including these groups are included in Table 1.

As these results indicate, some interesting differences between ethnic groups emerged when separated by high and low ability. For example, low achieving African American 8th graders had significantly higher expectancies for success ($\underline{M}$ = 6.82) than did their low-achieving European American counterparts ($\underline{M}$ = 5.04). Similarly, high achieving African American 8th graders were significantly less inclined to belief that the ITBS test measures intelligence than either their low-achieving African American peers or high achieving European American 8th graders.

Results of regression analyses

Our second research question concerned whether the predictive strength of the motivation and preparation variables on ITBS scores differed by race. A series of regression analyses were conducted using both ITBS verbal and ITBS math scores as dependent variables. Results were similar for both dependent variables, so only the results of the regressions using ITBS math scores as the dependent variable are reported. Regression analyses were conducted with the 8th grade sample only.

The first significant interaction (Figure 1) involved the relationship between perceived value of the test and scores on the math portion of the test. For African American students, there is no relationship between test scores and valuing, whereas for European American students the relationship is positive. On average, the more European American students valued the test, the better they scored. The second interaction indicated that whereas there was no relationship for European American students between the belief that ITBS test scores indicate how intelligent one is, for African American students this relationship was negative. That is, the more African American students believed that the ITBS test was an indicator of smartness, the lower they scored on the math portion of the ITBS. The third interaction indicated that whereas there was a positive relationship for European American students between the frequency of engaging in various test preparation practices, this relationship was slightly negative for African American students (Figure 3).

Discussion

Over the last 60 years, standardized testing in the primary and secondary grades has increased dramatically in both frequency and importance. As politicians continue their demands for accountability in education, the standardized testing trend is likely to continue, and probably to grow. The developers of standardized tests have traditionally argued against using test scores for anything other than diagnosing individual students. However, tests are increasingly being used to make decisions about the educational quality of teachers, programs, schools, districts, states, and nations. In all three of the schools in which the

present study was conducted, teachers were given bonuses if the test scores of their students did not decline. With such important stakes, it is essential that we determine the validity of the tests. The purpose of the present study was to examine two important types of factors, besides how much students have learned in school, that might affect their scores: The motivational orientations and preparation practices of students and teachers.

Previous research has demonstrated that there are differences among students and teachers in the ways they think about and prepare for standardized tests. For the most part, the results of the present study support and extend the findings of others. We will discuss our results in light of our four primary research questions.

Question 1: Are there mean differences among students by race and grade level?

Little research has examined students' perceptions of standardized tests, particularly from a developmental perspective. Paris et al. (1991) found that as students got older, they tended to view standardized achievement tests as less valid and less important. The results of the present student generally support those of Paris' et al. The eighth grade students in our sample perceived the test as less valid, prepared less for the test, and expected to do less well on the tests than did the 5th grade sample. These more negative perceptions of the test among 8th graders were found despite the fact that 8th graders did better on the test than did 5th graders. Unlike Paris et al., we did not find that older students were more anxious about the test. The finding that 5th graders were more anxious about the test than were 8th graders may be partially explained by the finding that the younger students spend more time preparing for the test. Perhaps the extra emphasis on test scores experienced by 5th graders created a higher state of anxiety for these students. Another possible explanation is that as students take the ITBS test year after year with few perceivable consequences (students often do not see their test scores), they become less anxious about it.

Turning our discussion to the issue of race differences, we will begin with an examination of mean differences. First, in contrast to previous research (e.g., Clawson et al., 1981; Payne, 1984), we did not find differences in the average reported levels of anxiety among African American and European American students. One possible explanation for this disparity may be that the students in our sample were not reporting their feelings of anxiety accurately. The pattern of results that emerged in the regression analyses, to be discussed shortly, may indicate some impairment of performance among African American students due to anxiety provoking cognitions. It may be that the African American students did not identify their feelings as anxiety, per se, but rather as concerns regarding the meaning of their performance on the exam. We will return to this issue below.

Our results regarding race differences in performance, expectancy for success, and self-concept are in accord with previous research (Graham, 1994; Stevenson et al., 1990). Specifically, we found that despite lower performance on the test, African American students had higher average self-concept scores and higher expectancy for success than did European American students. One explanation that has been offered for this attitude-achievement paradox is that, in an effort to protect feelings of self-worth threatened by the possibility of fulfilling negative racial stereotypes by failing academically, African American students dissociate their self-perceptions from their academic performance (Steele, 1997; Osborne, 1995). With this interpretive framework, the relatively high self-perceptions of African American students can be viewed as an ego-protection strategy.

Question 2: Different relationships between predictors and test scores by race?

To regression analyses used to answer our second research question provided results that support the stereotype threat theory of Steele and others. For example, the finding of a negative relationship for African American students between performance on the ITBS test and believing that the test scores reflect intelligence and no such relationship for European American students may be explained by stereotype

threat. These results also suggest that African American students, despite reporting similar levels of anxiety as European American students, may actually have been operating under additional stress when taking the ITBS test. It is interesting to note that there was no relationship between value (i.e., thinking the test was important) and test scores among African American students, whereas this relationship was positive for European American students. This finding, coupled with the results for perceiving the test as demonstrative of intelligence described above, suggests that it is not merely thinking that achievement is important that triggers stereotype threat. Rather, it is the specific belief that test scores reflect ability that appears to elicit stereotype threat and the corresponding inhibition of performance. Interestingly, high achieving 8th grade African American students were *least* likely to endorse the belief that test scores reveal intelligence. Perhaps this lack of belief reduced the anxiety of stereotype threat for these high achievers.

Limitations and implications

There are a number of limitations to the present study. First, by relying on self-report data, we are constrained in our ability to draw any causal inferences and must remain aware of the potential for misrepresentation that is present in any self-report study. Second, conducting racial comparisons without controlling for other variables, most notably SES, is always a questionable practice. We offer these data and these results as potentially interesting and important avenues for future research rather than as definitive statements regarding race differences. Third, the measures used in this study need further refinement. Although many of the scales were adapted from established measures (e.g., anxiety, self-concept, value) and were subjected to factor and reliability analyses, there is some evidence that some of the items were more readily understood by older students than by younger students. Future research in this area with similar but more fully validated measures should prove most useful. Finally, the disparities between students on variables besides race demand that caution be used when interpreting these results. For example, the African American and European American students attended two very different schools in different communities. Although an effort was made to control for some of the differences between these groups (e.g., the use of test score covariates), this in no way accounts for all of the relevant differences between the samples. Again, although our results point to some potential race differences between students that are in line with previous research and theory, it would be unwise to consider our results as evidence of racial differences.

Despite these limitations, our results also may have important implications. Most notably, the numerous differences by race and grade level of students in their perceptions of and preparation for taking standardized tests suggest that there may be more to how well students' perform on the test than what they learn in school. Specifically, how well students perform on standardized tests may be due, in part, to motivational factors, preparation practices, age, teacher attitudes, and such racially and culturally determined factors as stereotype threat. Given the finding that different students perceive and prepare for standardize tests differently, and that these perceptions and preparations are related to achievement in different ways for different students, it is difficult to be confident that standardized tests such as the ITBS accurately measure how much students know. When we consider that the questions about validity are most apparent for low achieving and non-white students, the wisdom of investing more money and time in these tests becomes increasingly unsound. Before increasing the use and consequences of standardized tests, more work needs to be conducted to determine their validity. Studies that focus on threats to validity besides test content should prove most informative.

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Table 1: Means on Motivation and Perception Variables by Grade Level, Race, and Achievement

Variable	African American		European-American		Summary
	1 5th Grade	2 8th Grade	3 5th Grade	4 8th Grade	
ITBS Math Score					
High Achievers	65.38	64.34	68.13	67.66	EA > AA
Low Achievers	33.05	40.34	39.59	46.06	
Anxiety					
High Achievers	5.17	4.24	5.25	4.36	5th > 8th
Low Achievers	**5.86**	4.41	5.36	4.14	
Self Concept					
High Achievers	6.30	6.03	6.02	5.58	5th > 8th
Low Achievers	5.50	5.78	5.40	**4.55**	AA > EA (low ach.)
Expect to do Well					
High Achievers	6.84	**6.43**	6.52	**5.78**	5th > 8th, AA > EA
Low Achievers	6.41	**6.82**	5.67	**5.04**	AA > EA 8th hi, low
Belief Test is Valid					
High Achievers	6.64	**4.79**	6.56	5.40	5th > 8th
Low Achievers	6.92	5.79	6.32	5.60	
Test Shows Smartness					
High Achievers	6.27	**3.83**	6.18	4.87	5th > 8th
Low Achievers	6.52	5.01	6.11	4.82	4 > 2 (high)
Value					
High Achievers	7.21	6.42	7.25	6.55	5th > 8th
Low Achievers	7.24	**6.97**	7.08	**6.15**	AA > EA (8th low)
Time Spent Preparing					
High Achievers	6.17	**4.12**	5.93	**4.30**	5th > 8th
Low Achievers	6.40	**4.51**	5.96	**4.18**	
Preparation Practices					
High Achievers	7.04	**5.33**	6.76	**5.37**	5 > 8
Low Achievers	7.36	**5.60**	6.46	**5.39**	AA > EA
Effort Attribution					
High Achievers	7.46	6.58	7.59	6.06	5 > 8
Low Achievers	7.75	6.91	7.57	6.53	

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Figure 1: Interaction of race by value on ITBS math scores

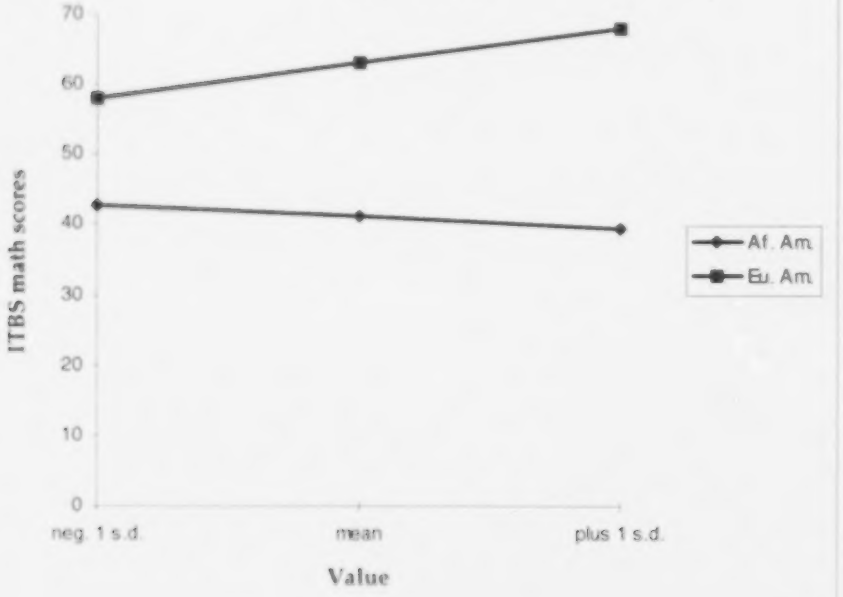

Figure 2: Interaction of race by belief test indicates smartness on ITBS math scores

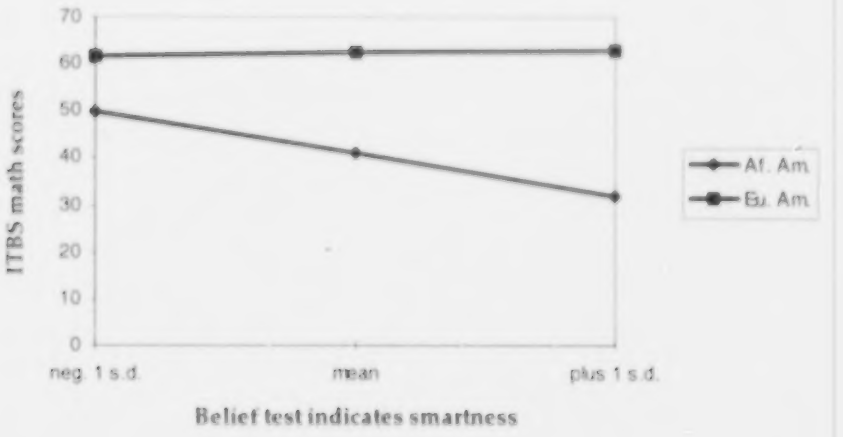

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Figure 3: Interaction of race by preparation practices on ITBS math scores